Original Article

Effects of Smartphone Addiction and Cyberloafing Behaviour of Nursing Students on their Clinical Decision-Making during Clinical Practice

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Abstract

Background: Smartphones and internet provide quick access to the information needed by nursing students in clinical practice. However, they can also lead to smartphone addiction and cyberloafing behaviours, which can result in both positive and negative effects. This study aimed to analyse the effect of cyberloafing and smartphone addiction levels of nursing students on their clinical decision-making during clinical practice.

Methodology: This study was descriptive, cross-sectional study. This study was conducted with 2nd year nursing students (n = 379) of 2 different universities between March and July 2018.

Results: The mean age of participants was 20.36 ± 1.17 and all of them use smartphones. The students' smartphone addiction was 29.22 ± 9.89, and the cyberloafing was 49.60 ± 17.70, and clinical decision-making was 139.20 ± 14.38. There was a significant positive correlation between smartphone addiction and cyberloafing (r=0.42, p<0.01). There was a significant negative correlation at smartphone addiction and clinical decision-making scale scores (r= -0.16, p<0.01). According to regression analysis, clinical decision-making have a negative and significant relationship with variables of smartphone addiction (β=-0.16, p=0.001), cyberloafing (β=-0.29 p=0.001) and smartphone usage in clinic practice (β=-0.07, p=0.126). Cyberloafing have a positive and significant relationship with variables of gender (β =0.23, p=0.000), smartphone usage in clinic practice (β=0.23, p=0.001), and smartphone usage related to course (β =0.14, P=0.007).

Conclusion: Increasing smartphone use by students in clinics also increases their cyberloafing behaviour, while decreasing their clinical decision-making skills.

Key words: Nursing Student, Cyberloafing, Smartphone Addiction, Clinical Decision-Making

Introduction

Having become indispensable in our day and age, computers and the internet are widely used in many fields. Besides its personal and social use, the internet also has many uses in professional life and education (Augner and Hacker, 2012; Choliz, 2012; Kalayci, 2010: Samaha and Hawi, 2016).   Although increasing use of computers and the internet for various different purposes has made life easier, it is has also resulted in addiction (Augner and Hacker, 2012; Bian and Leung, 2015; Choliz, 2012; Choi and Kim, 2015;

Noyan et al., 2015). Using the internet for personal matters rather than professional purposes in the work environment negatively affects productivity at work, leading to the situation that is referred to as 'cyberloafing' or 'cyberslacking' in literature (Garrett and Danziger, 2008; Kalayci, 2010). Cyberloafing behaviours, such as online entertainment, book reading, browsing of travel sites, online shopping and job search, are known to cause a loss of productivity (Moody and Siponen, 2013). With the use of the internet in education environments, it is said that students are now engaging in other distracting activities via the internet during class. This is why cyberloafing behaviour is seen as a factor that makes teaching a class more difficult for all instructors (Baturay and Toker, 2015). On the other hand, use of the internet for educational purposes occupies an important place in enabling students to learn on their own, take responsibility in reaching information and achieve lifelong learning skills (Durmaz Edeer and Sarikaya, 2015). The use of smartphones and internet particularly in clinical practice, provides nursing students the opportunity to rapidly access patient information and other information they require (Dennison et al., 2013; Phillippi and Wyatt, 2011). This opportunity can positively affect their decision-making skills related to patient care during their clinical training process. Although clinical decision-making may appear like a routine activity in nursing, it is a very important skill that affects patient care results (Al-Dossary et al., 2016; Chen et al., 2016; Jenkins, 1985). Clinical decision-making is a complicated process including many steps, such as choosing the best among different options, analysis, interpretation, explanation, questioning and evaluation (Chen et al., 2016; Johansen et al., 2016). All of these stages ensure the effective use of resources and increases the effectiveness of care (Al-Dossary et al., 2016). Thus, clinical decision-making, which is a skill that can be developed, is an important outcome in nursing education (Durmaz Edeer and Sarikaya, 2015; WHO, 2009). We could not find any studies in the literature regarding the cyberloafing behaviour of nursing students in clinical applications. In general, studies which have been conducted to date have focussed on both the positive and negative effects of

smartphones and internet during class (Cho and Lee, 2016; Dennison et al., 2013; Gill et al., 2012; Katz-Sidlow et al., 2012; Junco, 2012). Clinical practice is a good learning environment for students; hence, how they spend time their time in this environment is important. It is believed that the cyberloafing behaviour of nursing students throughout their clinical practice process can have positive or negative effects on patient care and self-learning of the students.

Aim of the Research: The purpose of this study is to examine the effects of cyberloafing and mobile addiction levels of nursing students on their clinical decision-making during clinical practice.

Methodology

This study was carried out as a descriptive, cross-sectional and correlation analysis. Data were collected between March and June 2018 from 2 nursing school in western Turkey. The students in these nursing schools first took theoretical classes on surgical nursing, then went through practice and applied for training in hospitals for surgical nursing. The students were in the clinic for a total number of 10 days, 8 hours a day.

Participants: The population of the study was constituted by 2nd year students of 2 nursing schools who were going through practice/applied training for surgery class (n = 420). Inclusion criteria were (1) being a student in the nursing school, (2) having and using a smartphone, (3), having internet access via the phone, (4) volunteering to participate in the study and signing the consent form. Participants (n=379) who agreed to participate and met inclusion criteria.

Data Collection Tools: A Demographic Data Collection Form, Cyberloafing Activities Scale, Smartphone Addiction Scale for Adolescents and Clinical Decision Making in Nursing Scale were used in the study.

The Demographic Data Collection Form prepared based on literature, consisted of age, gender the use of mobile phone / smart phone usage and internet usage in surgical practice.

Cyberloafing Activities Scale (CLAS) developed by Blanhard and Henle (2008), adopted to Turkish by Kalaycı (2010); and updated by Yasar (2013) in order to measure students' cyberloafing levels during learning

activities. CLAS is a 23 item Likert scale instrument with four factors (individual, search, social, and news). Scale items could be scored by the participants as 'never, rarely, usually, always'. A higher score obtained on the test was considered as a higher risk for addiction. The validity of the measurement tool for the analysis of psychometric characteristics was assessed linguistically and structurally. In the structural validity testing, 4 factors were obtained with the factor load (0.76–0.96). The Cronbach's alpha internal consistency coefficient was used to test reliability, and it was determined as 0.92 for the scale, varying between 0.77–0.94 for the sub-scales (Yasar, 2013). In the sample of this study, the Cronbach's alpha reliability coefficient was 0.83 for the scale, varying between 0.63–0.86 for the sub-scales.

Smartphone Addiction Scale for Adolescents (SAS-SV), Smartphone addiction scale (SAS) is a self-analytic scale that to differentiate smartphone addicts based on a Korean self-analytic program which is Internet addiction (K-scale) and the smartphone's own functions (Kwon et al., 2013). Revised version of Smartphone addiction scale (SAS-SV) is a scale to examine smartphone addiction. It is consisting 6 factors and the factors are accessed through 10 items with a six-point Likert scale (1: 'strongly disagree', 2: 'disagree', 3: 'weakly disagree', 4: 'weakly agree', 5: 'agree', and 6: 'strongly agree') based on self-reporting.[26] The six factors are daily-life disturbance, positive anticipation, withdrawal, cyberspace oriented relationship, overuse, and tolerance. The cut-off value for boys was 31 and 33 for girls (Kwon et al., 2013). For those who scored higher than the cut-off values are considered as high-risk for smartphone addiction. A reliability and validity study for the Turkish version of the scale was conducted by Noyan et al. (2015). The Cronbach's alpha coefficient showing the reliability of the SAS-SV was measured as 0.867. Test/re-test confidentiality coefficient was 0.926. A statistically significant positive correlation was identified between the Internet Addiction Scale and the SAS-SV, which showed a simultaneous validity.

The Clinical Decision-Making in Nursing Scale (CDMNS) Jenkins (1985) developed the CDMNS to describe the perceptions of clinical decision-making in students. The scale is a 5-point Likert-type measure consisting of 40 items with four sub-scales. The Cronbach's Alfa coefficient was found to be 0.83 in the original study. The validity and reliability study for Turkish was conducted by Durmaz, Edeer and Sarıkaya (2015). It has acceptable scale model goodness-of-fit in the confirmatory factor analysis. The Cronbach's Alpha coefficient was 0.78. The total mean score and total-subscale correlation coefficients were 0.74 and 0.82 respectively.[13] Students completed the scale themselves. They get a score from the scale between 40 and 200. The scale has no cut-off point. The high score obtained from the scale indicates decision-making perception is high and low score indicates it is low.

Data Analysis: Data analysed using Package for Social Science (SPSS) 23. Kolmogorov-Smirnov and Shapiro-Wilk tests were used to determine whether obtained data were normally distributed. Socio-demographic data were presented in number, percentage, chi-square test. In addition, correlation analysis was performed to examine the relationship between variables. Multiple linear regression analyses were then used to test the association of the clinical decision-making with cyberloafing, smartphone addiction. The level of significance was set at ≤0.05 for all the tests performed.

Ethical Consideration: This study was approved by the institutional review board of University Ethics Committee approved the study. The aim and content of the study were explained. Written and oral consent was obtained by the students who participated in the study.

Results

The mean age of participants was 20.36±1.17 (min=18, max=26). The sample consisted of 76% (n=288) female, and all participants had a smartphone. 49.9% (n = 189) of the students used a smartphone over two hours a day. Slightly more than half of the participants 51.9% (n=193) used smartphone over thirty minutes in eight-hour in surgical clinical practice and 56.6% (n=211) used smartphone related to course and practice over thirty minutes. The mean smartphone addiction of participants was 29.22±9.89 (min=10, max=55). The mean cyberloafing of participants was 49.60±17.70 (min=23, max=103). The mean clinical decision-

making of participants was 139. 20±14.38 (min=106, max=180) (Table 1)

An evaluation of the reasons why the nursing students participating in the study were using smartphones during clinical practice revealed that 92.1% (n=349) used them to search for

medication information, 78.1% (n=296), 54.1% for patient training purposes, 64.6% to search for the relevant studies, 15.3% to search for the relevant guidelines and 6.3% to search for information regarding the hospital.

Table 1. The Distribution of Socio-Demographic and Smartphone Use Features

Independent Variables		n	%
Nursing School	A	114	30.1
	B	265	69.9
Gender	Female	288	76.0
	Male	91	24.0
Smartphone Usage a Day	1-30 min	8	2,1
	31-60 min	33	8.7
	61-120 min	149	39.3
	Over 2 hour	189	49.9
Smartphone Only Usage in Clinic Practice	1-30 min	186	49.1
	31-60 min	135	35.6
	61-120 min	34	9.0
	Over 2 hour	24	6.3
Opinion on the Use of Smartphones in the Clinic Practice	Not used	66	17.4
	Unstable	27	7.1
	Better use	206	54.4
	Definitely use	80	21.1
Smartphone Usage Related to Course in Clinical Practice	1-30 dk	168	44.3
	31-60 min	127	33.5
	61-120 min	57	15.0
	Over 2 hour	27	7.1

Table 2. Comprasion of Smartphone Usage Features According to Smartphone Addiction

		Smartphone addiction					
Independent Variables		Yes		No			
		n	%	n	%	X^2	p
Gender	Female	127	76.0	161	75.9	0.01	0.54
	Male	40	24.0	51	24.1		
Smartphone Usage a Day	30 min	4	2.4	4	1.9		
	31-60 min	11	6.6	22	10.4	6.64	0.08
	61-120 min	57	34.1	92	43.4		
	Over 2 hour	95	56.9	94	44.3		
Smartphone Usage in Clinic Practice	30 min	65	37.7	123	58.0		
	31-60 min	64	38.3	71	33.5		
	61-120 min	24	14.4	10	4.7	23.12	0.00*
	Over 2 hour	16	9.6	8	3.8		
Opinion on the Use of Smartphones in the Clinic Practice	Not used	25	15.0	41	19.3		
	Unstable	87	52.1	119	56.1		
	Better use	9	5.4	18	8.5	8.42	0.03*
	Definitely use	46	27.5	34	16.0		
Smartphone Only Usage Related to Course in Clinical Practice	30 min	62	37.1	106	50.0		
	31-60 min	52	31.1	75	35.4		
	61-120 min	41	24.6	13	7.5	21.95	0.00*
	Over 2 hour	12	7.2	15	7.1		

Table 3. The Relation Between Independent Variables and Clinical Decision-Making of Nursing Student

	Model 1					Model 2					Model 3				
	B	SH	β	t	p	B	SH	β	t	p	B	SH	β	t	p
Smartphone addiction	-0.24	0.07	-0.16	-3.26	0.01	-0.07	0.07	-0.96	-0.96	0.33	-0.05	0.07	-0.04	-0.75	0.45
Cyberloafing						-0.24	0.04	-0.29	-5.58	0.00	-0.24	0.04	-0.29	-5.59	0.00
Smartphone Only Usage in Clinic Practice*											-1.09	0.71	-0.07	-1.53	0.12
R	0.166					0.319					0.328				
R²	0.027					0.097					0.100				
F	10.640					13.668					13.644				
P	0.001					0.000					0.126				

*Smartphone usage in clinical practice; 1= 1-30 min, 2= 31-60 min, 3= 61-120 min 4= Over 2 hour

Table 4. The Relation Between Independent Variables and Cyberloafing of Nursing Student

	Model 1					Model 2					Model 3				
	B	SH	β	t	p	B	SH	β	t	p	B	SH	β	t	p
Gender*	9.51	2.07	0.23	4.58	0.00	9.44	2.01	0.22	4.68	0.00	9.47	2.00	0.22	4.73	0.00
Smartphone Usage in Clinic Practice						4.73	0.98	0.23	4.78	0.00	3.58	1.06	0.17	3.34	0.00
Smartphone Only Usage Related to Course in Clinical Practice											2.73	1.00	0.14	2.71	0.00
R	0.230					0.327					0.353				
R²	0.053					0.107					0.117				
F	17.248					16.768					16.627				
P	0.000					0.000					0.007				

Gender: 1= Female, 2= Male

It was observed that 44% of the students had smartphone addiction. In addition, 76% of the students with smartphone addiction were female and 56.9% of the students used phones for ≥2 hours a day. Among those with smartphone addiction, 38.3% used the phone for 31–60 minutes in the clinic, while 37.1% were identified as using the phone for class and practice/training purposes for 1 to 30 minutes. Only 15% of the students with smartphone addiction said 'we can work without a phone' in a clinic, while 52.1% said they were 'undecided' in this regard. On the other hand, 75.4% of the students without smartphone addiction stated their opinions regarding smartphone use in clinic as 'we can work without a phone' and 'undecided'. A statistically significant difference was identified between the students with and without smartphone addiction with regards to their opinions on smartphone use in clinic, smartphone use in clinic only for classes and practice-related purposes (p<0.05) (Table 2).

The results of Pearson's Correlation showed that there was significant positive correlation between smartphone addiction and cyberloafing (r=0.42, p<0.01), individual cyberloafing (r= 0.35, p<0.01), search cyberloafing (r= 0.37, p<0.01), social

cyberloafing (r= 0.37, p<0.01), news cyberloafing (r= 0.24, p<0.01). There was a significant negative correlation at smartphone addiction and clinical decision-making scale scores (r= -0.16, p<0.01). Cyberloafing showed a negative and significant correlation with clinical decision-making subscale scores (Search for alternatives or options, Can vassing of objectives and values, Evaluation and re-evaluation of consequences, Search for information and unbiased assimilation of new information) (r=-0.32, r=-0.25, r=-0.27, r=-0.29, p<0.01).

Multiple regression analysis in Model 1 found that there is a moderately significant negative relationship between clinical decision-making and smartphone addiction of the participants (β=-0.16, p=0.001) and 2% of factors that affect clinical decision-making levels are explained by smartphone addiction (F=10.640, p=0.001). In Model 2 that there is a moderately significant negative relationship between clinical decision-making and cyberloafing (β=-0.29, p=0.001) of participants, and cyberloafing explained 7% of variation in clinical decision-making (Table 3).

Multiple regression analysis in Model 1 found that there is a moderately significant positive relationship between cyberloafing and gender of the participants (β=0.23, p=0.000) and 5% of factors that affect cyberloafing activities are explained by gender (F=17.248, p=0.001). In Model 2 that there is a moderately significant positive relationship between cyberloafing and smartphone usage in clinic practice (β=0.23, p=0.001) of participants, and smartphone usage in clinic practice explained 5% of variation in cyberloafing (Table 4).

Discussion

In our study, smartphone addiction was observed in approximately half of the students, and this rate was even higher among female students. It was determined that the participants used smartphones for more than 30 minutes through the duration of practice. The cyberloafing levels of the students who showed more internet use in the clinic and/or who had smartphone addiction were found to be higher. This showed that they used the internet for reasons other than the ones they stated (patient education, medical information

etc.). It would be appropriate to evaluate these results in light of the knowledge that the new generation has, in recent years, been called the 'wired generation'. These young people organise their activities, manage their social network and thus stay in constant contact with their peers through their smartphones in class and wherever they may be (Samaha and Hawi, 2016). However, it is important for the students to focus their attention on activities during training by distancing themselves from external stimuli. It is believed that any type of habit and practice that distances the students from the intended activities during class can disrupt their concentration and motivation, leading to disciplinary problems (Arabaci, 2017; Junco, 2012; Tindell and Bohlander, 2012). Also, an increase in the duration of internet use negatively affects academic success (Ergun and Altun, 2012; Hazelhurst et al., 2011; Ravizza et al., 2014; Wu et al., 2018). Furthermore, nursing students are highly distracted when they use smartphones during clinical practice.[21] On the other hand, another study observed that nursing students with higher scores in computer-use also exhibited higher clinical decision-making skills (Ozen et al., 2017). Our study, however, determined that students with higher cyberloafing levels had lower clinical decision-making skills. The relationship between information and decision-making is the most determining factor in the professionalization of nurses (Yaman Aktas and Karabulut, 2016). Clinical decision-making requires synthesising information and applying the best option. It is a complicated process that includes problem solving steps (Chen et al., 2016; Johansen and O'Brien, 2016). Experience and information are the main factors at this stage. Students are expected to take decisions based on information and the best evidence available (Sucu et al., 2012; White, 2017; Woda et al., 2018). As one of the various information technologies that make it easier to use information during patient care, smartphones provide the opportunity to reach and use the information in the shortest possible time. For this reason, they have been reported as potential tools that can be included in the learning process of the students (Ozen et al., 2017; Duncombe, 2018). However, cyberloafing is seen as an obstacle in the integration of information and communication

technologies into educational environments.[39] Various other studies have also described cyberloafing behaviours among students, such as shopping, checking e-mails and social media use during class (Gokcearslan et al., 2016; Kalayci, 2010; Wu et al., 2018).

There are various observations in the literature regarding the relationship between cyberloafing and the access to scientific information and academic success. A study states that these young people have developed a different language among themselves, and that the concept of multitasking has gained prominence. Students are directed towards cyberloafing, or towards non-academic activities, for reasons such as the thought that they can do 2 activities at the same time and also due to motivation problems, boring lessons, psychological reasons and being distracted (Ergun and Altun, 2012). Moreover, cyberloafing also limits the communication ability of the students, decreasing their interest in the learning environment (Samaha and Hawi, 2016). In fact, clinical practice is a setting where the nursing students can learn from experience, and learning from experience is one of the most effective methods in nursing education (Ulvestad, 2016). In this context, in a nursing education where active learning methods organised according to evidence-based care standards are becoming more and more prevalent, being able to reach information, developing self-learning skills and being able to read studies are important skills for students (Squires et al., 2011; Stevens, 2013). The interventions performed must be based on the most scientific information in order to provide reliable and effective care (White, 2017; Woda et al., 2018).

In conclusion, at a time when information technologies are seeing rapid development and widespread consumption, it is important to develop applications integrated into the nursing education. Applications, such as decision support systems that can be developed for smartphones, can shift the attention of the students into the desired direction. Also, it is believed that education aimed at students to control their cyberloafing behaviour can also be beneficial. Such education should be on literature scanning, evaluation, the ability to use guidelines in practice and should also include content that

makes it easier for them to follow foreign literature, such as occupational English. It is believed that rapid access to the right information will quickly develop the clinical decision-making skills of nursing students.

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